MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015/16

ETN4116 – ADVANCED NETWORKING TECHNIQUES

(ME, TN, TE)

10 MARCH 2016
2:30 p.m. – 4:30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages (including this cover page) with 4 Questions only.

2. Answer **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

Question 1

(a) Differentiate between Post Office Protocol (POP3) and Internet Message Access Protocol (IMAP) for electronics mail message retrieval.

[3 Marks]

(b) CuteFTP can be used as a File Transfer Protocol (FTP) client to transfer multiple files quickly.

(i) Identify either FTP is a reliable or unreliable data transfer. Explain your answer.

[2 marks]

(ii) Why is FTP using out-of-band control data transfer?

[2 Marks]

(c) There are a lot of messages being exchange between Windows Update server and Windows devices connected to Multimedia University (MMU) network. This results in high network congestion for the link coming into MMU internal network. As the MMU Network Manager, you need to write a report and purchasing request to MMU higher management to buy a new proxy server to solve the said problem. Your explanation should include the following items:

(i) What is a proxy server?

[2 marks]

(ii) How proxy server can ease the network congestion for the link coming into MMU internal network.

[2 Marks]

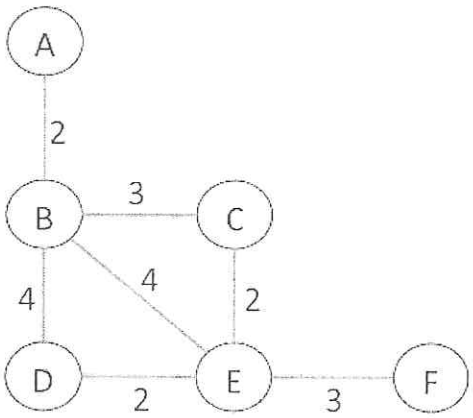
(iii) Draw the network diagram showing the proxy server implementation that you are suggesting. Your diagram should clearly identify where should be the proxy server located, the Internet gateway, firewall and user devices.

[4 marks]

Continued.....

Question 2

(a) Most routing protocols are based on either link-state or distance-vector approach. Given the network link in **Figure Q2a** where the link cost for each node is given in the diagram, answer the following question.



Node A routing table

Destination	Next Node	Cost
B		
C		
D		
E		
F		

Figure Q2a

(i) By using distance-vector routing, what is the final routing table for node A and node E (use the routing table format given in **Figure Q2a**)?

[5 Marks]

(ii) If the link between B to E is now broken, identify and update the routing table for node A and node E.

[2 Marks]

(iii) Why is the routing table not the same for all nodes using distance-vector routing?

[1 Mark]

(b) Explain the function of Network Address Translator (NAT). Discuss either NAT is still needed in Internet Protocol version 6 (IPv6).

[3 Marks]

(c) IPv6 by default is the network addressing use nowadays. List four (4) improvement features of IPv6 as compared to IPv4.

[4 Marks]

Continued.....

Question 3

(a) **Figure Q3a** shows the packets vs time for a streaming media and its received packets.

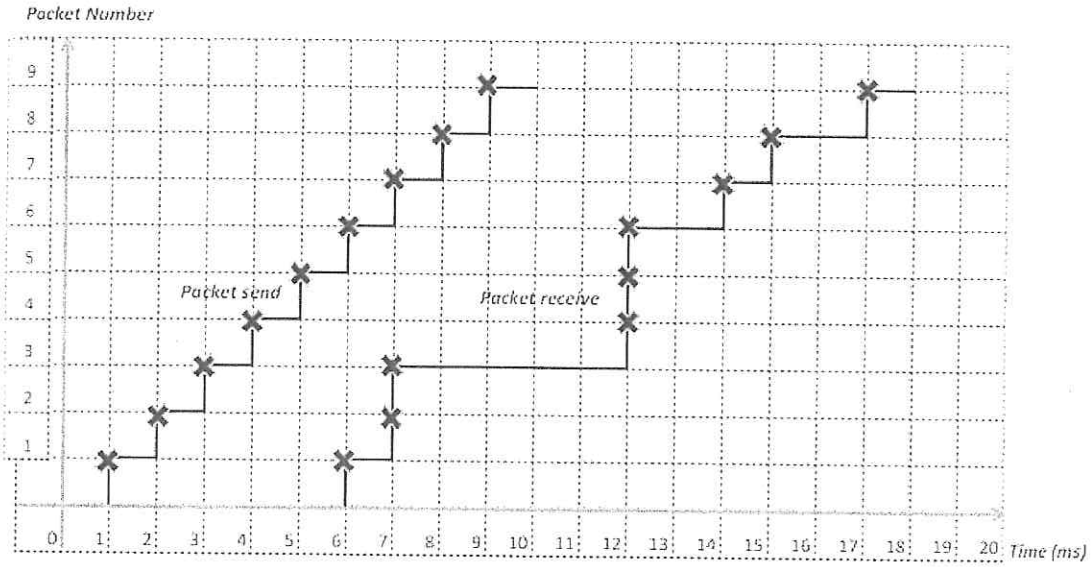


Figure Q3a

(i) Find the minimum and maximum delay between sender and receiver.

[1 Mark]

(ii) Redraw **Figure Q3a** in your answer sheet. Then, draw the fixed play out if the play out delay is 6ms. Identify which packet(s) will be dropped from the play out.

[6 Marks]

(iii) What is your recommendation to improve the problem in 3(a)(ii)?

[2 Marks]

(b) Name and explain the simplest way to recover from packet loss in streaming media.

[3 Marks]

(c) Discuss the function of Session Initiation Protocol (SIP) in Voice over IP (VoIP) call.

[3 Marks]

Continued.....

Question 4

(a) Man-in-the-middle attacks are typically attacks on online banking systems. The fraudster is nestling himself in the communication flow between the customer and the bank with the aim of manipulating the transaction data to his own advantage leaving the bank and the customer unaware. Discuss your solution to protect from this attack from the customer point of view and bank officer view.

[3 Marks]

(b) Describe both, public-key and symmetric-key encryption. How does public-key encryption better than symmetric-key encryption?

[5 Marks]

(c) With the aid of diagrams, discuss the differences between filter-based firewall and proxy-based firewall.

[7 Marks]

End of Paper